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5200 Forest Insect and Disease Control

November 7, 1977

Report on Blue River District

Forest Supervisor, Willamette NF

Gregory M. Filip, Pathologist in Forest Insect and Disease Management, recently visited the Blue River District and prepared the following report:

On October 13 a visit was made to the Blue River Ranger District, Willamette National Forest, to examine root disease in Douglas-fir plantations. I was accompanied by Ted Paulsen, Timber Management Planning (S.O.), Glen Brady, and Dennis Mottsiager, both District Forest Technicians.

We examined two Douglas-fir plantations about 18 years old which were about to receive their first thinning. The District was concerned with the mortality they were experiencing in these and other plantations. All dead and dying trees examined were infected with *Armillaria mellea*. Mortality appeared to be light and widely scattered.

Numerous large stumps from the former Douglas-fir overstory were present in both plantations. Several chlorotic trees were also infected with *A. mellea*. One tree near the road was killed by black stain root disease caused by *Verticillium dactylophora*. Although laminated root rot has been found in District plantations, none was found on the present visit.

Future management of these plantations is highly dependent on the intensity and kind of root disease present. In westside species, *A. mellea* infects and kills primarily weakened or suppressed trees. Healthy, vigorous trees are able to successfully "wall-off" infection through formation of resin barriers in woody roots. Any effort to increase tree vigor should help prevent infection by *A. mellea*. Thinning infected stands should reduce infection by increasing vigor of residual crop trees. However, there are not actual studies to confirm the effects of this treatment in Douglas-fir. The effects of fertilization on reduction of susceptibility to *Armillaria* root rot are not known.

Many plantation trees may be infected but not show above-ground symptoms. If a plantation is to be thinned to normal spacing, some of the crop trees which are already infected but symptomless may die, resulting in understocked openings. Areas which show light scattered mortality with moderate to heavy stocking can be lightly thinned to leave a slight overstocking. Spacing should be wide enough to ensure good response of released trees. Areas with more concentrated mortality should not be thinned since most of the surrounding trees are already infected and will probably die in the future. The general idea is to anticipate losses due to the disease which can act as a natural thinning agent if mortality is scattered. Our observations and those by Canadian forest pathologists indicate that tree killing slows when the stand approaches age 25. Tree killing may practically cease.

Our general knowledge of cultural treatments to prevent continued infection and mortality by *A. mellea* in Douglas-fir plantations is far from adequate. The District has expressed an interest in initiating small-scale thinning operations in infected stands to evaluate their effects on future tree infection and mortality. They are also interested in establishing permanent plots to record disease development in the plantation. FIDM personnel will be available to help develop and implement such evaluations at any time in the future. Such endeavors will not only benefit the District, but also other Districts in the Region which are experiencing similar problems in their plantations. FIDM personnel are also available to help identify and mark areas which are infected, in order to determine spacing levels to be left after thinning.

PAUL E. BUEFAM

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